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ABSTRACT

In response to the changing needs of an increasingly diverse society, the Illinois Community College System (ICCS) reformed its curriculum by integrating academic and occupational education. In order to determine the effectiveness of such curriculum integration, a study was conducted, via surveys and interviews, on ICCS' methods, revealing that: (1) academic courses adapted to the interests of career students (the most common method) had problems with internal integration and transferability of courses; (2) transfer courses designed for career students also had problems with transferability; (3) English as a Second Language courses are not utilized by many schools but seem effective; (4) linked, tandem, or cluster courses are more advanced methods, but have more student disciplinary problems; (5) multidisciplinary courses provide a broader conceptualization of integration; (6) learning communities are costly and sometimes inaccessible; (7) learning technologies have difficulties in implementation; and (8) work-based learning is difficult at times due to conflicting time schedules of students. (YKH)

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INTEGRATION OF ACADEMIC AND OCCUPATIONAL EDUCATION IN THE ILLINOIS COMMUNITY COLLEGE SYSTEM

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Contemporary educational reforms are geared toward restructuring education, often beginning with increased dialogue about changing from a "teaching" to a "learning" paradigm. Within elementary, secondary, and postsecondary systems, this new perspective reflects a shift from teacher-dominated instruction (didactic lecture) to constructivist approaches designed to increase student responsibility, involvement, and interaction [Boggs (1995) and Barr & Tagg (1995) as cited in Task Force on Integration (1997)]. Several forces within the community college are influencing this dialogue, including changes in the composition of students, faculty, curricula, and communities. Prominent among these are the following trends: (a) the increased numbers of students who have a wide diversity of learning needs (Rendon, 1994); (b) the inability of students to integrate academic subject matter into real world living (Grubb, Badway, Bell, & Kraskouskas, 1996); (c) the fast-paced changes occurring in the workplace that place demands on occupational education (Bailey, 1995); and (d) the increased fragmentation and rigidity of the academic disciplines (Bragg, 1997; Mourad, 1997).

In response to these many forces on community colleges, policy makers and experts recommend curriculum integration[1] as a way to improve the quality of education. Traditionally educators separate information into entities (disciplines) and draw attention to its distinctiveness and unique value. Much less frequently do they pay attention to the inter-relationships and connectivity among disparate bodies of knowledge. Yet, if relationships between different subject matter domains could be brought to the fore, either by teachers or learners themselves, student learning could be enhanced by showing how information applies in various contexts. Such opportunities are critical to preparing people to apply what they know to various goals and decisions, no matter what those goals or decisions might be. Applying new knowledge and skills in the context of the workplace is but one example. In all aspects of life—family, friendship, citizenship—adults need to be able to apply what they know to daily living.

Integration of occupational and academic education is a specific example of curriculum integration. This particular approach to integration can prepare learners to adapt to and succeed in the modern workplace characterized by rapid change where flexibility and problem solving abilities are essential (Bailey, 1995). While this goal of academic and occupational integration is important, there are additional and equally significant reasons for implementing academic and occupational integration in community colleges. As stated by the Task Force on Integration of Academic and Occupational Education in Illinois' Community Colleges (hereafter referred to as the Illinois Task Force on Integration), these considerations include:

- Integration fulfills the learning paradigm reform
- Integration offers a "breadth of focus and outcomes" for a diverse postsecondary student population
- Good occupational education is strongly equated to challenging academics
- Academic and occupational integration is "a liberating force leading to multiple educational goals"

Academic and occupational integration can improve what and how learners learn regardless of the curriculum, program or major. Academic and occupational integration can enhance all aspects of education by broadening occupational education and strengthening its connection to civic goals. Academic and occupational integration that includes "citizenship

[1] Prominent among the policy mandates is the Carl D. Perkins Vocational and Applied Technology Act Amendments of 1990, which required that secondary and postsecondary institutions accessing federal vocational funds engage in the integration of academic and vocational education.

issues such as public policies toward technology and employment" or "the evolution of American work ethic" (Badway & Grubb, 1997, p. 12) is pertinent to all students whether they declare their intent to attend college as transfer or workforce preparation. Surely faculty who believe education is fundamentally about enabling students to better understand and contribute to their world, freeing them to explore their full potential, will balk at a reform overly focused on job training. To win their acceptance, the integration academic and occupational cannot contribute to a narrowing of the curriculum. Rather, it must be a liberating force, leading to multiple educational goals by creating a more informed and compassionate citizenry.

Another argument offered for integrating academic and occupational education gets squarely at one of the thorniest issues facing education today. It addresses structural aspects of the educational system and the potentially detrimental phenomenon known as tracking. Set apart from the academic curricula, occupational education can be narrowly focused on immediate job preparation, limiting students' chances of advancement to further higher education or high-wage careers. However, academic and occupational integration has the potential to offer more breadth of focus and outcomes for a more highly diverse group of students. Referring to integration in the context of the high school, but equally as relevant to community colleges, Grubb (1997) explains:

> Broader programs are appealing to a broader range of students, facilitating the integration of students by class, race, and gender. Health-occupations programs can include would-be doctors as well as those who might become nurse assistants; industrial technology programs can include engineers as well as assembly-line workers; agriculture programs [can] include agronomists and soil scientists as well as farmers; business programs can include would-be CEOs as well as secretaries. These programs have some chance of reducing the segregation typical of large high schools [and community colleges], whereas conventional vocational programs – and the conventional separation of academic and vocational programs – maintain tracking in many forms. (p. 5)

In *Building Communities* (1988), the Commission on the Future of Community Colleges stressed that a healthy respect for and connection between academic and occupational education is crucial. Since most students find it different to transfer what they know from one discipline to another or from one context to another, curriculum designed to purposefully integrate material from diverse disciplines and situations is essential. Often, the best way to teach subject matter in a more integrated fashion is to use active learner-centered instructional strategies. By borrowing from the strengths of teaching traditions in both the academic and occupational (both school- and work-based) arenas, all faculty can develop a richer and deeper array of instructional strategies. As such, faculty are better able to address the wide variety of learning styles and preferences that students bring to the classroom, helping them to retain knowledge and skills for a longer period of time (Task Force on Integration, 1997, pp. 5-6). Secondary students, having participated in school-to-work initiatives such as tech prep, career academies and other reforms that stress academic and occupational integration, are bound to seek comparable instruction at the postsecondary level. Not providing for these students' learning needs may disillusion them, either decreasing the numbers of students who pursue a community-college education or contributing to their decision to drop out.

With an ever-present concern for enhancing persistence (Tinto, 1985 & 1987), community colleges must continue to rethink and reform curricula to meet the needs of an increasingly diverse student population. The need to implement various curriculum integration strategies at the community-college level to meet the needs of all students has

been established. In view of the need to continually enhance the quality of student learning, it is important to investigate academic and occupational integration in Illinois' community colleges[2]. It is critical that we learn more about how academic and occupational integration can and should work throughout the Illinois Community College System. What approaches to academic and occupational integration are being employed by community colleges in Illinois? What is the nature of the implementation process? This paper begins to provide answers to these fundamental questions, based on a survey concerning academic and occupational integration in all of the community colleges in Illinois.

METHOD

A survey instrument designed by Badway and Grubb (1997) was modified and used for this study. The instrument paralleled the original except that an item on "integration of technology" was added as recommended by the Task Force on Integration. The survey sought information about the implementation of eight integration approaches that have their roots in research conducted by Grubb and Kraskouskas (1992).

1. adaptation of academic courses for career students
2. transfer courses designed for career students
3. English as a Second Language (ESL+ courses for career students)
4. linked academic and occupational courses
5. multidisciplinary courses
6. learning communities
7. learning technologies used to integrate academic and occupational education
8. work-based experiences used to integrate academic and occupational education

Table 1
Academic and Occupational Integration Models Defined

Model	Definition
Vocational certificate programs require one or more general education courses	Students take standard courses to fulfill general education requirements for an occupational certificate program.
Associate degree programs require one or more general education courses	Students take standard courses to fulfill general education requirements for an associate degree (usually Associate in Applied Science, AAS) in an occupational field.
Writing, math, communications and/or technology is developed across the curriculum	All instructors--both academic and vocational--incorporate more writing, math, communications and/or technology into their courses. Writing-intensive occupational courses are an example.
Deans are responsible for *both* academic and career programs/departments	Deans (or other administrative personnel in similar positions) have responsibility for academic *and* career programs. An example of this approach is when a college no longer maintains the traditional structure of a separate transfer dean and career dean, but new positions are developed having cross-curricular responsibilities.

[2] This research was conducted to support the work of the Task Force on Integration of Academic and Occupational Education in Illinois' Community Colleges. For a copy of the report prepared by Illinois' Task Force on Integration entitled, "Academic and Occupational Integration in Illinois' Community Colleges" contact Darcy McGrath at the Illinois Community College Board, 509 South Sixth Street, Springfield, IL 62701, (217) 785-0082 at e-mail her at dmcgrath@ iccb.state.il.us

Table 1
Academic and Occupational Integration Models Defined (Continued)

*Academic courses are adapted to the interests of career students (i.e., Technical writing, business math, biology for health careers)	Conventional academics courses are infused with applications from occupational programs, but not accepted for transfer.
*Transfer courses are specially designed for career students (i.e., English 1A uses technology related to reading and writing assignments)	Conventional academic courses are infused with applications from occupational programs *and* accepted for transfer.
*ESL courses are specially designed for career students (i.e., ESL for health careers)	Courses aimed at improving the English-language reading of students, employing reading and vocabulary drawn from the related occupation, and having writing assignments that mimic those used on the job. Students are introduced to careers and the basic tasks and competencies they require.
*Some academic and occupational courses are linked as a unit (students concurrently enroll in linked courses)	Academic and occupational content is linked in two courses, creating "tandem courses". If more courses are linked, they are referred to as "clusters of courses". Linkages can be formed by using themes or career-oriented programs. In either case, the courses are taken during a single academic term, sometimes back-to-back in a block schedule. Team teaching can be a part of this model.
*One or more multidisciplinary courses are offered (i.e., Business ethics, history of electricity, technology and society)	The application of several different academic disciplines-- history, ethics, literature, philosophy-- to technological developments, working and its consequences, and other employment-related issues. The goal is to examine a particular question, problem, or issue from diverse perspectives to create a "new, single, intellectually coherent entity" (Gaff & Ratcliff, 1996) These courses are often included in general education programs, though with subjects of special interest to occupational students. They tend to focus on the social and political aspects of work and are not necessarily required for employment but for general education purposes.
*Learning communities involving clusters of programs or coordinated courses with a common core of outcomes designed for a specific cohort of students	Tandem courses and clusters of courses can become larger groupings, referred to as "learning communities". In this model, any number of disciplines can be linked including conventional academic and occupational courses. According to Schaad (1997) "learning communities have two common features: a) they link classes together and build relationships between subject matter to provide coherence for students, and b) they build both academic and social community for students and faculty by enrolling them together in a large block of course work." Therefore, "a cohort of students is enrolled in coordinated curriculum taught by a team of faculty members who plan together. Social integration between faculty members and students can occur during weekly discussion groups." Social functions are deliberately planned to enhance the interpersonal relationships between students and faculty.

Table 1
Academic and Occupational Integration Models Defined (Continued)

*Learning technologies such as computers and the internet used to integrate academic and occupational education.	This model is the least clearly specified, but the following definition provides a starting point: The deliberate use of distance learning, computers hardware and software, the internet, and other emerging learning technologies to integrate academic and occupational subject matter in ways previously unimaginable. This model goes beyond increased use of computer technologies within distinct academic or occupational courses or even across the curriculum (other models described herein capture that idea.) An example of this model is utilization of the internet and world-wide web to link information and resources that would ordinarily not be found together in one course, either academic or occupational, and to apply those new understandings to the world of work.
*Work-based learning such as internships, cooperative education, professional/clinical experiences, etc. that connect the academic environment with the world of work.	Occupational programs that ***require*** work-based learning as a means of engaging students in application of academic and occupational knowledge, skills and attitudes learned in the classroom and transferred to the workplace.

*Integration models of particular interest because of their perceived potential for diffusion throughout the Illinois community college system.

Along with a cover letter providing explanation for the study, a brief one-page survey was sent by fax and mail or delivered in person to one key respondent at each of the 49 community colleges in Illinois. If there was an individual at a community college who was also a member of the Illinois Task Force on Integration, the survey was given or sent directly to that person, requesting their assistance in securing the required information. After initial mailing/distribution, the response rate was 71 percent. Approximately four weeks later, the survey was sent a second time to those who had not yet responded. After this second mailing/distribution, the response rate was 96 percent.

Of the 47 respondents, most were community-college deans or vice presidents; a few were presidents or faculty. In addition to acknowledging the use of various curricular integration models by their colleges, some respondents also sent documents describing academic and occupational integration processes being implemented on their campuses. These materials were reviewed and pertinent information was gleaned to enhance our description of implementation of particular models.

A final step used to determine the nature of implementation of academic and occupational integration in Illinois' community colleges was a telephone interview with the contact individual from twenty (20) purposively selected colleges. The selection criteria were based on the extent to which a particular college used one or more of the more advanced or atypical integration models (i.e., applied academics courses that transfer, learning communities, learning technologies.) Five individuals from OCCRL, the Illinois Community College Board (ICCB), and the Illinois State Board of Education (ISBE) conducted the telephone interviews with the community-college contacts. Each interviewer received specific instructions and materials to facilitate his/her interviewing, including a standard interview protocol. Questions provided in the protocol were intended to explore

the nature of a particular college's implementation of academic and occupational integration in more detail than could be obtained via paper/pencil survey.

Suggestions for interviewing included walking the contact person through the survey results before starting the interview, attempting to confirm or correct information about current practices; adhering to the standard questions provided on the protocol, but adding probing questions to illicit further depth; taking detailed notes of the respondent's comments; tape recording the interview; creating a brief statement synthesizing major findings immediately following the interview; and cross-checking results with other members of the interview team. If the interview was tape recorded, verbal permission from the interviewee was verified on the tape. The telephone interviews took from 20 to 45 minutes, averaging 30 minutes.

Content analysis was conducted on the data on an individual and cross-institutional basis, enhancing the possibility of identifying patterns of utilization of particular integration models within and across all of the community colleges in the state of Illinois. In addition, data were analyzed to identify consequential themes and issues related to the implementation process. The qualitative interview findings were used to enhance interpretation of the survey results.

FINDINGS AND DISCUSSION

In this section, findings are presented according to the eight integration models defined previously as highest priority. Within the discussion of each model, we present information concerning the implementation process that accompanied development and/or utilization, both across and within particular community colleges in the state of Illinois.

Academics Courses Adapted to the Interests of Career Students

Academic courses adapted to the interests of career students include any conventional academic course which contains *applications* from occupational programs, but which is not accepted for transfer to a four-year institution. A recent study called this model the "most common form of integration" explaining that it is typically "locally developed" or, in other words, developed by community college faculty working among themselves to bridge the gap between academic and occupational education (Grubb et al., 1996, p. 6).

Thirty-eight Illinois community colleges indicated that they offer academic courses specifically tailored to career students. Reviewing the names of all courses reported by the colleges in the survey, a wide array of applied academics courses are evident throughout the state system, especially in areas such as:

- technical, business, or practical writing
- business, industrial, health, agricultural, technical, or liberal arts math
- math for teachers or nurses
- English for business or technical careers
- career speech for business or health care
- business or environmental law
- business statistics
- technical or applied physics
- business, technical, or agricultural communications

As is evidenced in the above course titles, writing, math, and science are the predominant subjects of applied academics courses. Writing courses consist primarily of business or technical writing, with some colleges offering more specific or advanced offerings such as Police Report Writing, Professional Written Communications, Technical Writing Internship (Rock Valley, Black Hawk College), Writing for Desktop Publishing (Illinois Central) and Advanced Technical Writing (Lewis and Clark). Math courses dovetail frequently with career education programs, especially in the areas of agriculture, industrial technology, health care, education, electronics, and business. In addition, several science courses match the needs of career programs, with technical or industrial physics (Prairie State College, Triton) and anatomy and physiology courses being the most predominant. Agriculture science courses such as Introduction to Animal Science and Introduction to Soils (Highland) are also offered, but these are reported much less frequently.

With few exceptions the community colleges surveyed offer more applied math and science than writing courses, possibly because math and science appear more immediately applicable to technical content. Because many of these courses are initiated within academic divisions the career students are required to go outside their departments to take them. For example, at Black Hawk, the technical communications portion of the curriculum is developed by a technical writing professor in the English Department who works with vocational faculty to develop a technical writing course. More applied science and math courses than writing courses originate with the technical faculty than with the academic math and science faculties.

In addition to applied academics courses, sometimes applications are infused into existing courses rather than treated as stand alone courses. Such is the case at Illinois Valley Community College (IVCC) where integrated modules are taught across the curriculum similarly to the Writing Across the Curriculum (WAC) concept. At IVCC, integrated modules are used in the following areas: chemistry in auto tech or agriculture, reading in child care, art in plastics or CAD (computer aided design), and computer applications are offered in humanities courses. Special thematic projects allow students from different curriculum areas to examine particular issues and concerns surrounding recycling and rivers.

Our follow-up interviews with community college administrators regarding applied academics courses produced some interesting results. Several administrators gave the impression that some vocational faculty dismiss the benefits of applied academics courses because they believe they draw the student's time and attention away from occupational-technical courses. Internal integration—meaning fusion of academic components or modules within technical departments alone, as opposed to external integration through which career students go to academic departments to receive courses—has not yet reached a very high level of development in some community colleges, partly because vocational faculty have not built in sufficiently rigorous academic requirements.

Other difficulties with the applied academics model are evident in our surveyed findings. Most applied academics courses are not transferable, and many appear to be developmental level. Team teaching of these courses is apparent in less than a quarter of the colleges. When done, a typical approach is for a math instructor to participate in a health care course with health care faculty or, as in the example of the Tech Writing/Electronics course at Sauk Valley, the English and Electronics professors teach both separately and together, coordinating their activities to provide students with real world experiences.

Transfer Courses Designed for Career Students

An integrated (applied) academics course designed to transfer is similar to the model discussed above, with the important stipulation that it is *transferable*, making it more valuable to those career students who intend to continue their education at a four-year institution. Such courses are pivotal to Tech Prep and 2+2+2 curriculum that sets as an intention goal to support matriculation of students from high school to community college to four-year college or university. However, transfer courses specifically designed for career students are uncommon. Only ten colleges reported such courses, primarily technical writing, advanced technical communications, and science courses related to health care. Triton College offers a Rhetoric 101 course specifically designed for all AAS students to meet transfer requirements. Several community colleges like Morton report that students do transfer their occupational courses upon completion of the AAS degree, but the college cannot guarantee that they will count toward the bachelor's degree, in the same way that the laboratory courses often transfer to universities but they do not always count for transfer credit.

Some community-college personnel who were interviewed described the integration of academic and occupational education at odds with the Illinois Articulation Initiative that specifies a general education core for all of higher education in Illinois. They were particularly hesitant to offer applied academics courses—again, the most common approach to academic and occupational integration in Illinois' community colleges—because of a concern for retain the transferability of these courses. Those interviewed were sympathetic to the need to make traditional academics courses more relevant and useful, but they were not willing to change academics courses in ways that might limit students' opportunities to transfer their courses to the university level. Resolving the need to make academic courses more applicable while also retaining transferability seems to be a priority for community-college administrators in Illinois.

English as a Second Language (ESL) Courses

English as a Second Language (ESL) courses can be considered an approach to academic and occupational integration because they infuse career-related information into English-language reading and vocabulary. Grubb (1996) reports that the vocational ESL model involves "teaching basic skills (or English) within courses that draw reading, vocabulary, writing exercises, and other applications from a broad occupational area. Each also provides what might be termed career exploration: an introduction to the specific jobs within the occupation and to the concepts, practices, and demands in these positions" (p. 163). This model emerges largely as a response of community colleges to serve students who are entering higher education because of increased immigration since the 1960's and to high dropout rates among remedial non-English-speakers who considered remedial courses only marginally applicable to their career goals.

Despite the value of learning in context, particularly for students who lack advanced literacy competencies, only four of Illinois' community colleges reported implementing the vocational ESL model. Such findings were surprising because we expected a much higher level of utilizing of this model in Illinois' community colleges. Nonetheless, Kishwaukee reported having quite an advanced, three-level ESL program. Triton offers bilingual automotive courses to accommodate immigrant students. The ESL program at William Rainey Harper is supported, in part, with money from the state's Education-To-Careers (ETC) initiative, and it is designed to allow immigrant students to make a better transition into vocational programs. In this program, classes are taught by language teachers, but occupational teachers contribute both by meeting with the language teachers to develop the

curriculum and by teaching the language teachers who, in the case of the nursing program, go through a practicum as part of the development of their courses.

Linked, Tandem or Cluster Courses

Linked academic and occupational courses represent a more advanced form of curriculum integration and a rudimentary approach to learning communities (see next section for further discussion.) Linked courses (also referred to as 'tandem courses' or 'clusters of courses' if more than two courses are involved) are taken concurrently by a cohort of students during an academic term, allowing for the integration of academic and occupational subjects on a broader scale. Linked courses may be team taught, providing an added dimension of integration. With the addition of another faculty members, different perspectives toward content and various approaches to instructional practice are brought together, enhancing the integration of academic and occupational content. When 'clusters of courses' are used, a sequence of courses and related practica are created. Clustered courses usually exhibit some natural relationship and can range from basic-level courses to advanced thematic presentations. Difficulties with this model include an increased need for joint faculty planning and increased social dysfunction and discipline problems among students, the latter being a barrier to implementing even more advanced forms of the learning community model discussed below.

Eight Illinois community colleges reported using linked or clustered academic and occupational courses according to one of the following patterns:

1. Linkages typically pair speech and communications courses with some sort of business or technical courses (DuPage, South Suburban). Math and communications courses are also linked to the courses required of Ford ASSET and GM ASEP students at Triton. These sorts of linkages may be considered limited in the sense that there is little or no coordination of curriculum (or supplementary activities or services) outside of the classroom instructional setting.

2. Again, at College of DuPage, the cluster model is used by faculty in the business program to link seven business and marketing courses to create a flow-of-work simulation. "Students enrolled in these courses attend class at a common location and complete tasks which simulate the interdependence of information and production flow on the job, as well as learning the job-specific and generic technical skills necessary to operate business equipment, schedule output, and complete accounting and marketing tasks" (Grubb et al., 1996, p. 11). Similarly, Illinois Valley Community College offers the MIMIC Project (Making Industry Meaningful in College) where students in business, engineering design, accounting, manufacturing, and electronics form teams to produce, market, and sell a product. A newly developed MIMIC service component replicates this approach for students in child care services.

3. A more intimate linkage occurs in programs in which the students attend all linked courses as a cohort and in which the faculty coordinate their efforts to provide the integration of curriculum (McHenry). McHenry's manufacturing program relies primarily on speech and communications as the academic component, but it does require three electives from social sciences, natural sciences, math and English composition, which broadens the academic base of the program. Olive Harvey also reports some faculty coordination between linked courses in engineering and business programs. Although Richland lists its Math for Health Careers course as a multidisciplinary course, its description leads us to consider it a linked course, given the coordination of faculty efforts in developing the course.

4. At the other end of the spectrum are those colleges that only require that students enroll concurrently in career and academic courses such as English composition, social science, physical science and consumer education. No coordination among the faculty or in the development of curriculum is apparent. Start-up costs of this model at South Suburban are anticipated to be about $5,000 for travel and stipends to train four faculty.

5. Yet another approach to linked courses is offered at Rend Lake where several occupational-degree programs are linked into a core curriculum, such as the Administrative Assistant, Health Information Assistant, Legal Assistant, and Information Processing Assistant degree programs share courses in the Office Systems Technology. Faculty work together to coordinate the courses, and so faculty interest in continuing is the most important ingredient for sustaining this practice.

Multidisciplinary Courses

The multidisciplinary model reinforces the application of academic courses, such as history, ethics, literature, and philosophy, and the general "study of culture from sociological or anthropological perspectives," (Grubb et al., 1996, p. 7) to career-related developments and issues. The objective of multidisciplinary courses is to offer occupational students new, more analytically challenging, approaches to education. Multidisciplinary courses are frequently included in general education programs and, more so than appl. d academics courses that stress related academic skills required for the workplace, they emphasize the social and political aspects of work. These courses may not be considered essential aspects of career 'training', but they do contribute to a broader conceptualization of a truly integration academic and occupational education. Theoretically, the value of this model lies both in the fact that it exposes the traditional general education student to occupational subjects, and that it draws the occupational student directly into academic curriculum with a solid focus on writing and analytical skills that is indisputably of value in the workforce.

Fifteen Illinois community colleges reported using the multidisciplinary course model. Examples of multidisciplinary courses include the following:

- Health, Business, Professional, and Medical Ethics courses offered by the College of DuPage, Illinois Central, Rend Lake, Moraine Valley, and Triton
- History of Business course at Highland
- Environmental/Agricultural Ethics course at Lewis and Clark
- Environmental/Science course at Danville Area
- Science, Technology, and Social Change course at Rock Valley
- The Worker in America, The Individual and Technology, and the Future of Technology and Work courses at Triton

Ethics as part of the health profession or business programs is the most popular manifestation of multidisciplinary courses, and these ethics courses are often tailored to specific topics within occupational programs (DuPage, Illinois Central, Lake County, Moraine Valley, Oakton, Rend Lake, Triton). Lewis and Clark offers an ethics course for environmental/agricultural students and Danville Area provides a course in environment/science course. John Wood uses the multidisciplinary model in its broadcast electronics program as well as in health careers, including nursing.

Social science courses are also offered in support of the interest of career students, typically involving general "cultural" courses that offer the student "a broad view of what

culture is." These courses can be a grab-bag of commentary on the impact of technology, media, movies, art, current events, international implications, actions and so forth on society (Heartland, Illinois Valley, Rock Valley, Triton). We found only one instance in which an apparently more traditional history course is offered: The History of Technology (Oakton). A Social Psychology course is offered at Rend Lake and Heartland. Literature courses are offered in only one instance (Moraine Valley) and this entails a course in children's literature as part of child-care program.

Generally, the multidisciplinary model appears to work in two ways in Illinois colleges: either the multidisciplinary courses are recommended by or even linked to occupational curricula, or the courses are specifically designed for the career students and therefore possibly overly narrow for the general student population. In this respect, a fine line is drawn between applied academics and multidisciplinary courses. Without close-up analysis of course syllabi and classroom observation, further commentary on multidisciplinary courses—and their distinctions from and merits compared to applied academics courses or other integration models—cannot be made.

Learning Communities

Learning communities consist of clustered programs or coordinated courses with a shared set of outcomes designed for a specific cohort of students (Gabelnick, MacGregor, Matthews & Smith, 1990; Matthews, Smith, MacGregor & Gabelnick, 1997). Learning communities are larger sets of linked courses that share many of the same characteristics as previous models, but are particularly capable of linking a greater number of disciplines. According to a recent doctoral study, "learning communities have two common features: (a) they link classes together and build relationships between subject matter to provide coherence for students, and (b) they build both academic and social community for students and faculty by enrolling them together in a large block of coursework" (Schaad, 1997). Students and faculty maintain a consistent, tight bond over a period of time to reinforce the emergent teaching/learning relationship.

Ten Illinois community colleges report implementing the learning community model, but we found a wide variation in structure and emphasis, suggesting few community colleges had implemented learning communities on a very wide scale. Perhaps the purest application of this model is found at McHenry County where "a cohort of students participate in a comprehensive series of modularized courses and work experiences" that are "planned, designed, and taught by a team of faculty with a focus on integration of arts and sciences with occupational perspectives along with academic learning integrated with work-site experiences." As a part of its postsecondary tech prep demonstration grant, McHenry County has pioneered the learning communities approach in an office systems technology (OST) program. That program (and the manufacturing and electronics mentioned earlier) are part of an "Academy for High Performance" since all programs focus on preparing individuals for work in today's technological and informational society. The initial framework for McHenry College's Academy indicated the following must be present:

- integration of "general education" curriculum with the "occupational education"
- a significant work-based experience component
- a team effort with representation from various college and business constituents
- up-to-date standards and high expectations for occupational programs while incorporating industry-based/derived competencies
- general education requirements consistent with college policy

For the OST program, faculty involved in the initiative were from computer information systems, communications, humanities, math and science, social sciences, and, of course, the OST area. A college counselor and employer representative were also part of the team, referred to locally as a "cell". This cell concerned itself with developing an integrated academic and occupational curriculum and a method of delivery that fosters such integration. Since the development of the OST learning community, McHenry County College has developed a plan whereby integration can be achieved in other program areas through:

- creating curriculum modules that are one-credit hour courses where each "gen ed" module, when completed in blocks of three, meet state guidelines for transferability
- using portfolios and journals to encourage students to connect theory and practice
- proving problem-based curriculum based on case studies throughout the curriculum
- infusing team building activities and problem-solving/critical thinking components

At William Rainey Harper, learning communities differ in their topics from semester to semester, but a constant characteristic is that the student cohort comes from the major area and the classes are team-taught and developed by academic faculty who support integration with occupational education. A learning community called The Global Village integrates a career course in international business with general education courses in geography, political science, and so forth. Students who major in international business can meet general education requirements when taking the international business course; students who are not in the international business program can meet the general education requirements from the perspective of occupational areas, as opposed to learning it from purely a theoretical perspective. Academic faculty are key to the development of learning communities at William Rainey Harper, and most of the courses are team taught.

At Illinois Central, the Quest Model distinguishes itself from other attempts at learning communities in the Illinois system by providing a separate student community that is not well integrated with the general college community. The model is noted for fostering student solidarity within the community college, but this characteristic is also seen as a detriment because students form such a cohesive group that they do not easily engage in other aspects of college life.

Another variation of the learning community is manifested in courses organized into blocks within a particular occupational program, such as the newly forming engineering sciences learning community at Black Hawk. Also at Black Hawk we learning about an approach to the learning community that might be called pre-occupational since it caters to students who are taking remedial academics courses combined with a career orientation and personal development seminar.

Rock Valley is experimenting with the idea of Focus Interest Groups (FIGs), a program that grew out of the academic divisions of philosophy and speech. The college hopes to expand the FIGs into occupational course groupings. One college considers tech prep agreements between the community college and local high schools as the basis for a learning community, perhaps because students move through the system in groups, sometimes taking the same courses in the same sequence (Olive Harvey). The learning communities among these colleges vary considerably in their two principal characteristics: student group solidarity and faculty coordination and cooperation.

Though several community college administrators thought that learning communities were a good idea, they also perceived that a great deal of time and resources would be needed to implement them fully. In periods of fiscal austerity, they did not believe that learning communities were sustainable. They also expressed doubt that many of the adult, working students who populate their occupational-technical programs could take advantage of learning communities, limiting their applicability to the community college setting.

Learning Technologies Used for Integration

The model of using technology to integrate academic and occupational education is the most difficult to define. Though little consensus exists, the model can be defined as the deliberate use of distance learning, computer hardware and software, the internet, and any other emerging educational/information technology that allow the integration of curriculum, academic and occupational. An example of this model is the use of the internet and the world wide web to enhance integration of information and resources within and across academic and/or occupational courses.

Fifteen Illinois community colleges report using educational technology to integrate academic and occupational education, but we found little evidence to suggest that they are deliberately linking academic and occupational content utilizing these technologies. Primarily math, English composition and communications, and biology courses are taught using computers to research (via the internet) or produce class work (Danville Area, Heartland, Kishwaukee, Malcolm X, Morton, Rend Lake, Sauk Valley, Shawnee, William Rainey Harper). Heartland and Sauk Valley appear to be the most advanced in encouraging the use of the internet in a wide variety of academic and business courses. Other uses of technology focus primarily on software packages for problem-solving in science, math, agriculture, nursing and engineering (Illinois Central, Illinois Valley, Kishwaukee, Moraine Valley, Rend Lake). Moraine Valley uses software applications to provide students who are re-entering their Nursing program an opportunity to review their academic and vocational skills. Rend Lake is an especially good example of this version of technology use.

Computer labs are also common and are available either to the open student body or at least to specific occupational programs (Olive Harvey, Olney, Kishwaukee). Shawnee requires computer courses in nearly all occupational curricula, and William Rainey Harper offers links between academic and occupational courses and computer classes, such as a class on Power Point that allows the students to develop presentations for their other classes. This class is team taught and accrues transfer credits. Use of the internet is not yet very advanced at Illinois Central and is seen as somewhat disadvantageous because it is "very time intensive." Faculty involvement appears to be crucial in developing and implementing educational technology, though the administration usually takes the lead in providing students with access to the internet and computer technology in general.

Clearly, the impact of new educational technologies is only beginning to be felt by community colleges. The idea of employing technologies in particular courses is spreading rapidly, but using technologies to connect disparate bodies of knowledge is much less evident. And, whereas the potential benefits of new educational technologies may be limitless, the ability to capitalize on them is not. Limited resources and expertise require that community colleges give careful thought to how new technologies will be implemented (Layton, 1997). How integration of academic and occupational education can be facilitated by these new technologies should be given careful considered when the planning is done.

Work-Based Learning

The work-based learning (WBL) model specifies work-based learning experiences that encourage students to apply in the workplace the academic and occupational knowledge, skills and attitudes obtained in the classroom. One definition of WBL used in a recent national study of community colleges is that WBL is:

> instructional programs that deliberately use the workplace as a site for student learning. WBL programs are formal, structured, and strategically organized by instructional staff, employers, and sometimes other groups to link learning in the workplace to students' college-based learning experiences. WBL programs have formal instructional plans that directly relate students' WBL activities to their career goals. These WBL experiences are usually but not always college-credit generating. Instructional programs that involve youth apprenticeships, clinical experiences, school-based enterprises, and formal registered apprenticeships are examples of WBL programs. (Bragg, Hamm, & Trinkle, 1995, pp. 4-5)

To many experts, the notion of integration of academic and occupational education and the idea of work-based learning are highly compatible. Kazis and Goldberger (1995) suggest that "the two innovations are mutually reinforcing" (p. 171). Bailey states that better connections between academic and vocational instruction and workplace learning can "play an important role in strengthening the effectiveness of the workforce" (pp. 36-37).

Thirty-seven Illinois community colleges implement some variation of the WBL model; however, the extent to which the integration of academic and occupational education is an explicit goal of WBL is unknown. Many Associate in Applied Science (AAS) occupational degree programs include some sort of WBL component, although some do not make it a requirement. Community colleges in Illinois that report making WBL an option for students in occupational programs include Black Hawk, Danville Area, John A. Logan, Olive Harvey, Rend Lake, Sauk Valley, William Rainey Harper. Because a number of community college students are part-time and already employed, some colleges find it difficult to arrange WBL experiences. Sauk Valley's programs are optional, but "strongly recommended." WBL components offered in Illinois community colleges are included in a wide variety of programs (among others):

- Accounting
- Agriculture
- Auto Body
- Auto Mechanics
- Broadcasting Technology
- Business
- Child Care
- Computer Aided Engineering and Design
- Computer Information Systems
- Cosmetology
- Criminal Justice
- Culinary Arts
- Dietary Management
- Electronics Tech
- Fashion Merchandising
- Fire Science
- Health Care
- Horticulture
- Interior Design
- Law Enforcement
- Manufacturing Technology
- Marketing
- Medical Transcription
- Office Technology
- Real Estate Appraisal
- Truck Driver Training

Programs that are implemented under the auspices of an outside industry such as the automotive or health-care usually have a built-in WBL component. These models of integration are the oldest in operation, some of the nursing and business programs being in existence since the 1960s-1970s. An example of this model working in another field is the Ford ASSET automotive program offered at Triton and other community colleges in the state. (For a more indepth discussion of work-based learning in community colleges in the United States, see Bragg, Hamm, & Trinkle, 1995 and Bragg & Hamm, 1996.)

CONCLUSIONS

Curriculum integration involving the integration of academic and occupational education takes many forms. Prominent in Illinois' community colleges is the applied academics model [similar to national results reported by Grubb et al. (1996)], with many of these courses having a long history. With their strength being applicability to occupational fields, few of these courses count toward transfer, limiting their utility to students who intend to continue to the baccalaureate level (a requisite goal for students engaged in 2+2+2 programs.) Along with applied academics courses, work-based learning is fairly evident in Illinois' community colleges, again showing a lengthy history in many institutions [similar to national findings reported by Bragg et al. (1995)]. Although it is not typically required, many postsecondary occupational programs strongly encourage students to participate in an internship or clinical experience, believing that real-world experience is an irreplaceable means of connecting theory to practice.

Besides applied academics and work-based learning, other models such as multidisciplinary courses, linked or tandem courses, or learning communities are used far less often, suggesting supportive policies and incentives are needed to encourage adoption of these more complex academic and occupational integration models. Implementation issues involving faculty time, fiscal resources, and student needs are not peripheral. They must be addressed if academic and occupational integration is to proliferate in the Illinois community college system.

If the goal of helping students learn more and better is a priority to Illinois' community colleges, then curriculum integration is a necessity. And, if the commitment to stopping the isolation of academic and occupational education is real, stronger linkages must be created. Opportunities to forge stronger relationships between academic and occupational education in Illinois' community colleges should not be overlooked, but the challenges are great. Much more needs to be done to implement curriculum integration system wide. The challenges that lie ahead for Illinois' community colleges are probably best depicted in the closing statement of the Illinois Task Force on Integration report:

> Changing how education is provided does not come without cost... The cost of collaboration for release time and possibly increased staffing, the cost of reformulating existing systems, and the cost of engaging reluctant instructors and administrators can pose a burden. Leadership and commitment from community college administrators is critical, and resources and support from local, state, and national sources is essential to ease the transition. (Task Force on Integration, 1997, p. 23)

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